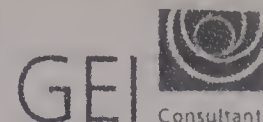


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October 11, 2007
Project 04516-2

Ms. Irene M. Dale
Environmental Engineer
Bureau of Waste Site Cleanup
Department of Environmental Protection
205B Lowell Street
Wilmington, MA 01887

RECEIVED

OCT 11 2007

DEP
NORTHEAST REGIONAL OFFICE

Dear Ms. Dale:

Re: Immediate Response Action Plan Modification No. 8
50 Tufts Street
Somerville, MA
RTN 3-23246

On behalf of UniFirst Corporation of Wilmington, Massachusetts, we prepared this Immediate Response Action (IRA) Plan Modification No.8 for the 50 Tufts Street site in Somerville, Massachusetts (the Site). For tracking and reporting purposes, the Massachusetts Department of Environmental Protection (DEP) has consolidated all Release Tracking Numbers (RTNs) for this Site under one number, RTN 3-23246. The Site is currently classified Tier IC.

IRA Modification 8 is for activities conducted at the 50 Tufts Street property and the 60 Tufts Street property. The IRA assessment activities discussed in this document were initiated on July 9, 2007 and are ongoing. These activities were verbally approved by Ms. Irene Dale of the DEP during phone conversations on July 5, 2007 and August 9, 2007 between Ms. Dale and Ms. Ileen Gladstone, P.E., LSP of GEI Consultants, Inc.

The IRA Transmittal Form (BWSC105) for IRA Modification 8 was submitted by eDEP on October 11, 2007 and a copy is in Attachment A. The Chief Municipal Officer and the local Board of Health have been notified of the IRA modification. Copies of the notification letters are in Attachment A.

1. CONTACT INFORMATION

Entity Undertaking the IRA

John R. Badey
Vice President of Distribution and
Engineering
UniFirst Corporation
68 Jonspin Road
Wilmington, MA 01887
978.658.8888 ext 578

Licensed Site Professional

Ileen S. Gladstone, P.E., LSP
Vice President
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801
781.721.4012
LSP License: 9719

REF
354.353
GEI

2. BACKGROUND

Chlorinated VOCs, particularly PCE, have been measured in soil, groundwater, and indoor air at the Site. Chlorinated VOCs were measured in indoor air samples collected in the 50 Tufts Street building.

Currently, the 50 Tufts Street property is unoccupied. A sub-slab depressurization system (SSDS) was installed inside the building and has been operating since April 30, 2007. Monitoring data collected for the SSDS show that the system has vacuum influence at all sub-slab monitoring points inside the building, which is an indication that the system is capturing soil vapor beneath the slab, preventing its migration to indoor air. Total VOC concentrations in the extracted soil vapor from the SSDS have decreased by approximately 56 percent since start-up of the system.

Based on multiple rounds of groundwater measurements, the general direction of groundwater flow at the Site is to the northeast across Tufts Street towards Knowlton and Franklin Streets. However, vapor may migrate radially and in proximity to source areas in soil and is not limited to the direction of groundwater flow. PCE was measured in indoor air in one of the units at 60 Tufts Street which is located north, and cross-gradient, of the 50 Tufts Street property.

DEP requires that site-specific risk assessments be undertaken for both the short term (generally five years) and the long term (a foreseeable period, generally 30 years). There is a significant range of values utilized by both Federal and state agencies to determine when, and to what extent, measures must be undertaken to address PCE and other chlorinated solvents when present in indoor air. Based on risk assessment calculations using unit risk factors that DEP published as guidance approximately 20 years ago -- which are less recent and more conservative than those currently used by US Environmental Protection Agency (EPA) and other regulatory agencies -- the levels measured in Unit 1 at 60 Tufts Street would be considered an imminent hazard, and are also above DEP's long-term level of actionable risk. Based on the EPA's methodology, which uses much more current and up to date science than was available to DEP when it issued its guidance, the levels measured at 60 Tufts Street are below imminent hazard levels, but above long-term levels of actionable risk. Regardless of the level of risk determined through the risk assessment process, DEP requires that concentrations of chemicals detected in air in residences be reduced as much as feasible, taking background concentrations, technical impracticability, and other factors into account. Thus, IRA activities have been undertaken to reduce concentrations at 60 Tufts Street as much as feasible.

3. IRA OBJECTIVES, PLAN, AND SCHEDULE (310 CMR 40.0424[1][E])

3.1. IRA Objectives

The objectives of the IRA Modification at the Property are to:

- Evaluate whether VOCs are present in groundwater at 60 Tufts Street.
- Evaluate the distribution of VOCs in soil vapor north of the 50 Tufts Street property boundary.
- Reduce the mass of contaminants in soil vapor at the 50 Tufts Street property and control the migration of soil vapor from the property by installing a soil vapor extraction (SVE) system.
- Reduce the potential for vapor intrusion into the 60 Tufts Street building by controlling the migration of soil vapor from the 50 Tufts Street property.

- Monitor the effectiveness of the mitigation conducted.

3.2. Completed IRA Activities

GEI provided DEP with a preliminary design for the SVE system in our Memorandum 50 Tufts Street – Soil Vapor Extraction System Design submitted to DEP via email on August 9, 2007. A copy is in Attachment B.

GEI obtained permission to conduct work at 60 Tufts Street and provided a “Work Plan for Evaluation of Groundwater and Soil Vapor, 60 Tufts Street” to Mr. Tim Paoli of Greater Boston Properties, Inc. on June 27, 2007. A copy is in Attachment B. Mr. Paoli is the property manager for 60 Tufts Street.

GEI engaged Geosearch, Inc. (Geosearch) of Fitchburg, Massachusetts, and Norfolk Services, Inc. (Norfolk) of Bridgewater, Massachusetts to conduct investigation activities and install the SVE system.

3.2.1. Installation of Soil Vapor Monitoring Points (July 9 to 13, 2007)

Between July 9 and 13, 2007, GEI observed Geosearch install 38 temporary soil vapor monitoring points using a Geoprobe® and hand tools in areas on the northern, western, and southern sides of the Property building, and at 60 Tufts Street, adjacent to the northern Property boundary. Geosearch also installed three overburden monitoring wells with soil vapor sampling ports: one in the grassy southern portion of the Property, and two in the parking area at 60 Tufts Street. Temporary soil vapor points are shown in the figures in Attachment B.

The monitoring points have been used for ongoing measurements of soil vapor quality, evaluating the influence of the SSDS on soil vapor pressure outside the building, and have provided data to support remedial design and assessment. During installation of the monitoring points, GEI personnel collected information on soil vapor and soil conditions. Several monitoring points were constructed to also function as pilot-scale extraction points for the SVE system.

3.2.2. SVE Diagnostic Test (July 25 to 31, 2007)

From July 25 to 31, 2007, GEI conducted a diagnostic test to collect information about soil vapor flow and vacuum distribution to assist with the design of the SVE system. The test consisted of:

- Connecting the Site building SSDS to temporary extraction points (SVT-5D and SVT-8S) via temporary above-ground piping,
- Adjusting the SSDS extraction flow and vacuum over several different time periods to create various soil vapor pressure conditions, and
- Measuring the pressure at temporary soil vapor monitoring points during the manipulation of the soil vapor pressure conditions.

Results of the diagnostic test are summarized below and presented in the memorandum entitled “50 Tufts Street – Soil Vapor Extraction System Design” included in Attachment B.

The diagnostic test showed that the radius of influence of the SSDS ranged from approximately 45 to 90 feet under various vacuums. Based on the results of the test, spacing of the extraction points approximately 40 feet apart was considered appropriate for the SVE system design and will provide overlapping vacuum influence in all areas when all extraction points are operating.

3.2.3. Install SVE system (August 13 to 24, 2007)

On August 13, 2007, Geosearch installed five SVE points in the northern parking area at the Property, and two SVE points in the southern parking area at the Property using hollow stem augers. From August 14 through 24, 2007, Norfolk excavated trenches and installed SVE system piping. Norfolk connected individual SVE points to underground header pipes. Above ground pipes on the western wall of the building connect the SVE headers to the existing manifold pipe for the SSDS. Soil vapor from the SVE headers will combine with the flow from the SSDS headers and be treated with the existing granular activated carbon units installed to treat the SSDS off-gas (two 2,000-pound carbon units in series).

Details of the SVE system installation, including extraction point construction and piping configurations, are described in the memorandum entitled "50 Tufts Street – Soil Vapor Extraction System Design" in Attachment B.

4. REMEDIATION WASTE MANAGEMENT

Excess soil was generated as the result of SVE system installation. The soil was temporarily stored on-site in sealed roll-off containers, and transported off-site as hazardous waste. GEI did not perform any dewatering during the installation of the SVE system.

Off-gas is being treated through activated carbon and the spent carbon will be temporarily stored on site and transported off-site periodically as hazardous waste.

5. ENVIRONMENTAL MONITORING PLAN AND PERMITS

5.1 Environmental Monitoring Plan for Indoor Air

- Following startup of the SVE system, GEI conducted indoor air sampling to measure VOC concentrations of air inside the building at 50 Tufts Street. The samples were collected using Summa canisters and submitted for laboratory analysis by Method TO-15. Samples were collected at six locations. The results of sampling will be reported when available.
- GEI will collect sub-slab soil gas samples at 60 Tufts Street in November 2007 and indoor air samples in December 2007.
- Additional sampling will be performed at least quarterly at 50 and 60 Tufts Street for one year. This quarterly indoor air sampling will be coordinated with the on-going monitoring for the SSDS at 50 Tufts Street.

5.1. Environmental Monitoring Plan for Extraction System

5.1.1. After Active SVE system Start-up

The SVE system was activated on August 22, 2007. GEI measured the following on days 1, 6, 13, 20, and 27 after startup of the SVE system:

- Total VOC concentrations and vacuum pressure at each of the active SVE System extraction points and at selected soil vapor monitoring points using a photoionization detector (PID) and manometer, respectively.
- Soil vapor pressure at selected soil vapor monitoring points using a manometer with a resolution of 0.001-inch water.

- Total VOC concentration in the influent and effluent from the off-gas treatment system and between carbon units using a PID (since the off-gas treatment system is part of the currently operating SSDS, this monitoring may overlap with the existing SSDS monitoring program).

Because the operation of the SVE System affects the flow rates and sub-slab vacuum of the SSDS, we monitored potential changes to the SSDS on a daily basis during the first week of operation of the SVE system.

5.1.2. One Month after SVE Start-up and Monthly Thereafter

Because the SVE System uses the same mechanical equipment and off-gas treatment as the SSDS, the current long term monitoring program for the SSDS (monthly inspections) is sufficient for monitoring the operation of the system equipment and the carbon usage rates. That program currently consists of monthly monitoring, at a minimum, to confirm that system parameters such as flow rate, vacuum, and off-gas concentrations remain consistent, and to monitor for potential breakthrough of the carbon units.

Monthly monitoring of the SVE system, includes measuring:

- Total VOC concentrations and vacuum pressure at each of the active SVE System extraction points and from the influent and effluent of the off-gas treatment system using a PID and manometer, respectively.
- Soil vapor pressure at selected soil vapor monitoring points using a manometer with a resolution of 0.001-inch water.

5.2. Additional SVE System Monitoring

After any significant modifications are made to the SVE System (e.g. changing the number of active extraction points), we will measure total VOC concentrations at each of the SVE System extraction points using a PID and measure soil vapor pressure at selected soil vapor monitoring points using a manometer. We will also evaluate the potential impact to the SSDS if SVE System changes are likely to significantly infringe on the operation of the SSDS.

5.3. Permits

GEI's contractors obtained any necessary permits for the SVE installation, such as electrical permits, from the city of Somerville.

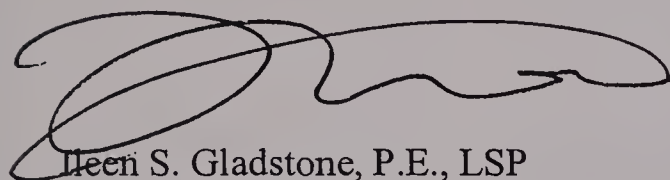
5.4. Schedule

The installation of the SVE system was completed on August 24, 2007. GEI will continue to monitor the SVE system and SSDS at the 50 Tufts Street property as described in this IRA Plan Modification No.8.

Please contact me at 781.721.4012 or igladstone@geiconsultants.com if you have any questions.

Sincerely,

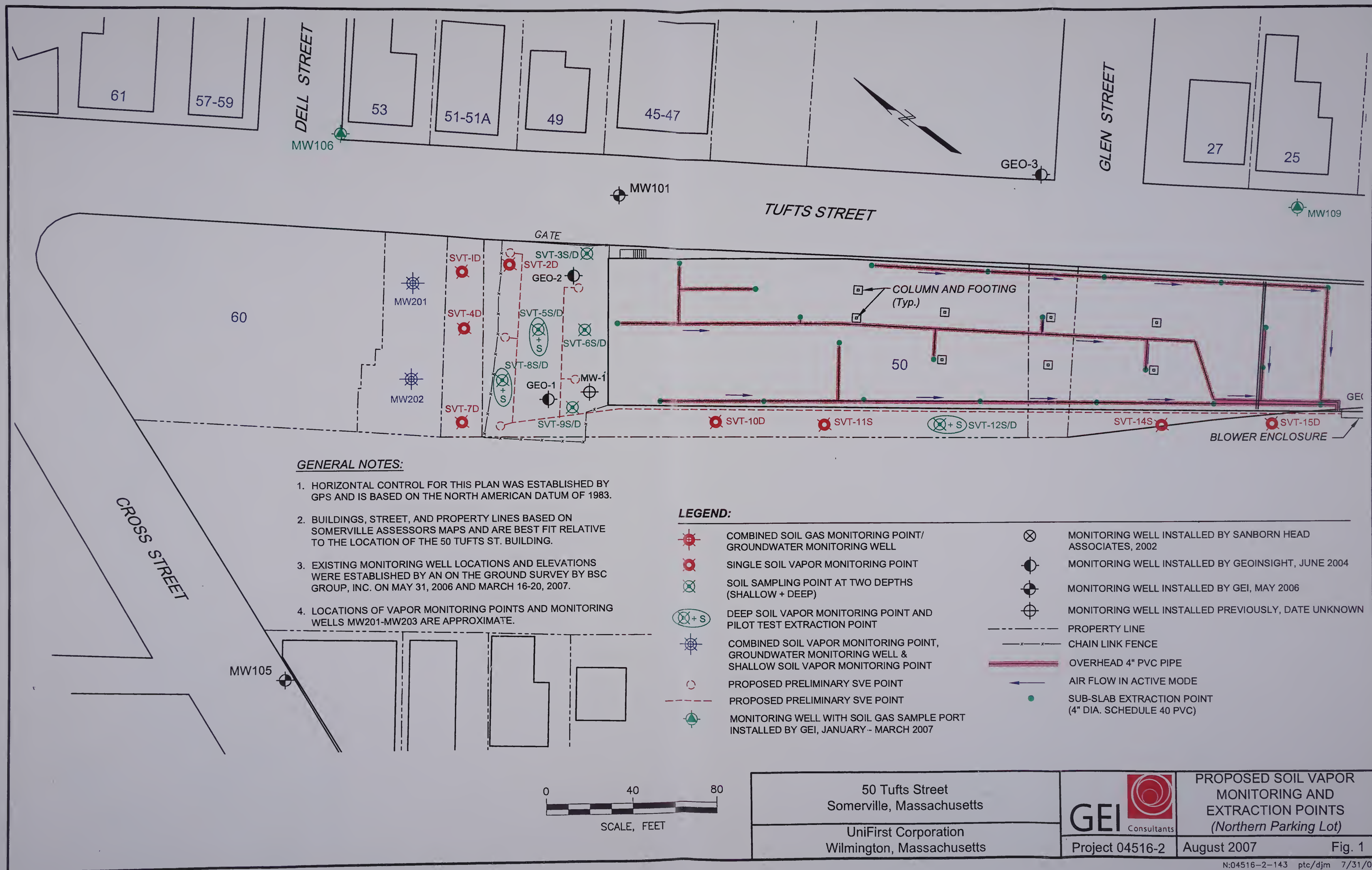
GEI CONSULTANTS, INC.

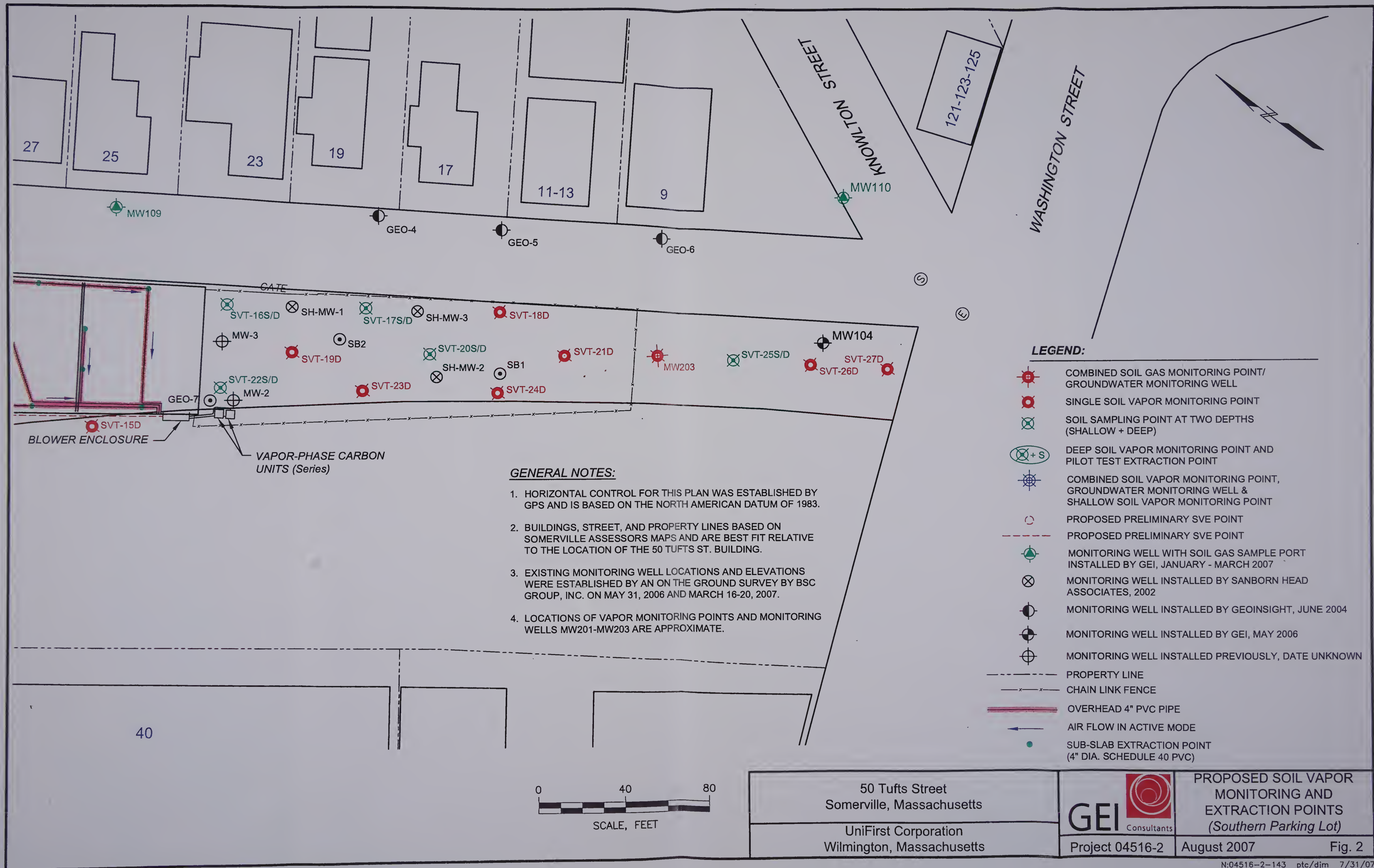


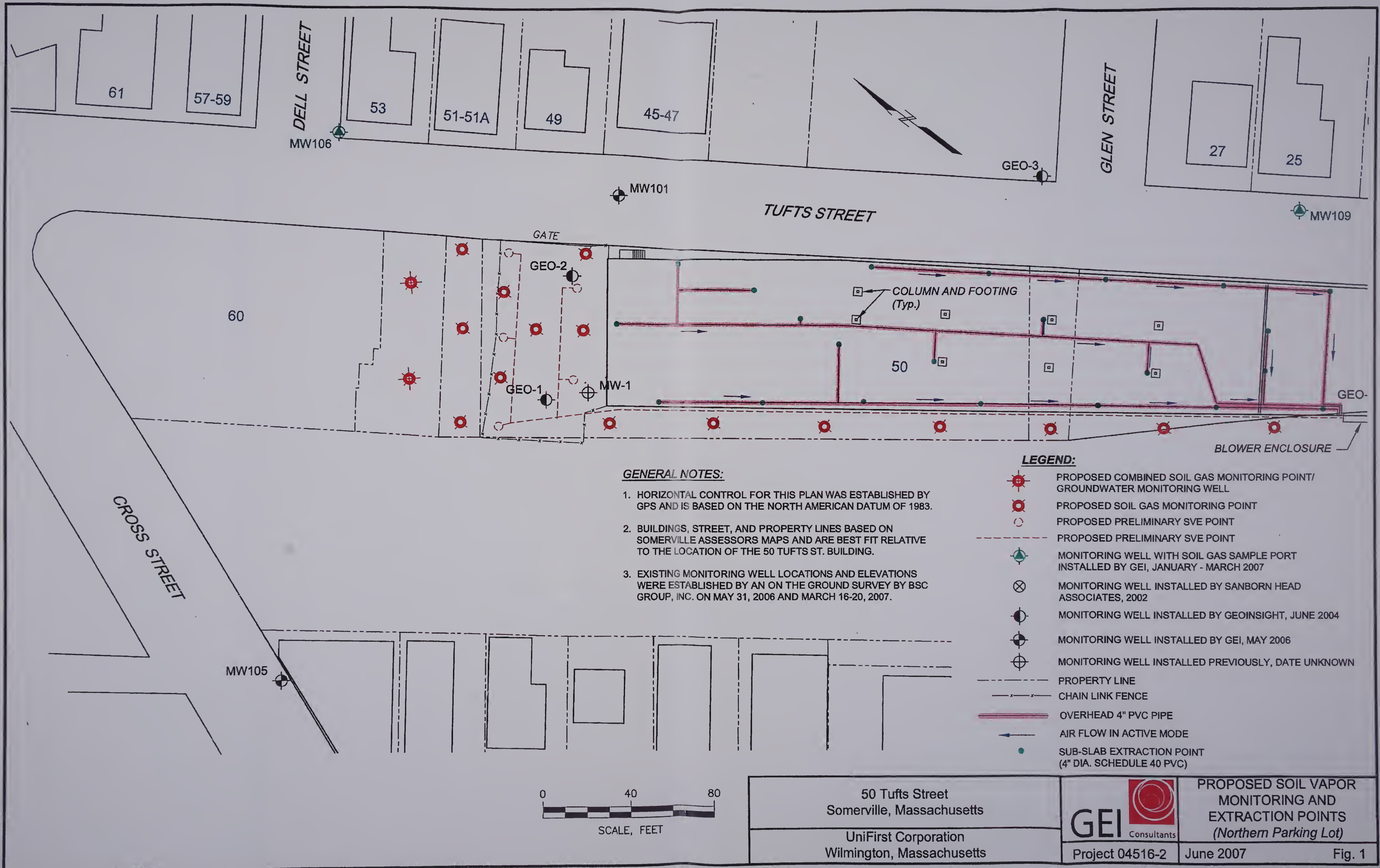
Helen S. Gladstone, P.E., LSP
Vice President

HAB/ISG:jah
Enclosures

c: John R. Badey, UniFirst Corporation
Peter Mills, City of Somerville
Tim Paoli of Greater Boston Properties
Kate Caste, 60 Tufts Street







WORK PLAN

Groundwater and Soil Vapor Evaluation 60 Tufts Street

This work plan presents the proposed approach and schedule for soil, groundwater, and soil vapor investigation on the southern side of the building at 60 Tufts Street, Somerville, Massachusetts. The purpose of the investigation is to evaluate the feasibility and practicability of soil vapor extraction (SVE) in the area between the buildings at 60 Tufts Street and 50 Tufts Street as a means to prevent migration of chlorinated volatile organic compounds (VOCs) from the subsurface into the indoor air at 60 Tufts Street. To accomplish that purpose, GEI has designed an investigation to delineate the extent of chlorinated VOCs in soil, soil vapor and groundwater in the area between the two buildings at 50 and 60 Tufts Street.

Background

50 Tufts Street was used for approximately 50 years as a laundry supply business. During that time, detergents, dry cleaning fluid, and other chemicals were stored on, and transferred and distributed from, the property. In October 2003, the company that then owned the property, 50 Tufts Street, Inc., owned by John Danais, reported to the Massachusetts Department of Environmental Protection (DEP) that chemicals had been discovered as a result of environmental testing conducted by its tenant, in connection with the tenant's plan to purchase the property. John Danais' business has gone bankrupt, and the property currently is vacated. The current owner of the property, Somerville Two LLC, acquired the property in 2005 through foreclosure on a mortgage on the property.

Soil borings and groundwater monitoring wells were installed on the 50 Tufts Street property in June and July of 2004 and soil and groundwater samples were collected for laboratory testing. Additional monitoring wells were installed along Tufts Street in August 2004 and groundwater samples were collected for laboratory testing. Since 2006, GEI has collected additional soil, groundwater, soil gas and indoor air samples in the vicinity of the 50 Tufts Street property to evaluate the nature and extent of the contamination.

Quite a lot is known about the distribution and extent of VOCs in the groundwater and soil vapor in the immediate vicinity of 50 and 60 Tufts Street, as substantial investigation work already has been completed in that area. Groundwater, soil, soil vapor and indoor air samples have been collected and evaluated from multiple locations on those properties, and at multiple locations surrounding them. Based on multiple rounds of groundwater measurements, the general direction of groundwater flow at the 50 Tufts Street site is to the northeast across Tufts Street towards Knowlton and Franklin Street. However, vapor migration very near areas where chlorinated VOCs have been released can occur radially from those areas and is not limited to the direction of groundwater flow.

Based on the results of soil, soil vapor and indoor air samples taken at 50 and 60 Tufts Street and the surrounding area, radial soil vapor migration does appear to be occurring here. One purpose of the proposed investigation at 60 Tufts Street is to determine whether VOCs also are present in groundwater below 60 Tufts Street. If VOCs are present in groundwater at concentrations that may constitute a potential source of VOCs to soil vapor, GEI may need to reassess SVE as a strategy for preventing migration of VOCs.

Soil Vapor Extraction

Soil vapor extraction is a remediation method that can be very effective for removing volatile contaminants from unsaturated soil. The objective of SVE will be to prevent the potential migration of VOCs in soil gas from the 50 Tufts Street property toward the 60 Tufts Street property. The SVE system would use the same mechanical equipment that was installed for the sub-slab depressurization system (SSDS) that is currently operating at the 50 Tufts Street building. However, before we can design such a system, we must first evaluate the subsurface conditions between the two buildings at 50 and 60 Tufts Street to confirm that the proposed system is appropriate and is likely to be effective.

The elements of the work plan are described below in order of their proposed implementation. We have recommended that a property boundary survey be completed prior to initiating the field work to confirm that the proposed locations are within the intended property boundaries. Therefore, completion of the property survey, contractor availability, and access agreements may affect this preliminary schedule. The work plan will be reviewed with the Massachusetts Department of Environmental Protection (DEP) before it is implemented.

Task 1 - Install soil vapor monitoring points and groundwater monitoring wells – July 9 to 13, 2007

- To help evaluate the distribution of VOCs in soil gas north of the 50 Tufts Street property boundary, five monitoring locations will be installed on the property at 60 Tufts Street. The approximate locations are shown in the attached figure (Fig. 1). GEI will also coordinate the installation of five soil vapor monitoring points in the parking area at the adjacent 50 Tufts Street property. Actual locations will be determined based on ability to obtain legal access, location of utilities, and field observations. The soil vapor monitoring points will be used to measure the distribution of VOC concentrations in soil outside the building and provide data to support remedial design and assessment. Multiple monitoring points will be constructed to allow sampling of soil gas at multiple depths below the ground surface. Several monitoring points on the 50 Tufts Street property may be constructed to also function as pilot-scale extraction points for a potential SVE system. VOC concentrations in the soil gas will be measured using a photo-ionization detector (PID). Up to ten soil gas samples will be collected using stainless steel vacuum canisters and submitted for laboratory analysis of chlorinated VOCs to confirm the PID results.
- The monitoring points will be installed using a Geoprobe drilling rig which is capable of installing up to 12 points per day, or by hand tools, depending on drilling conditions and physical access constraints. GEI will obtain plans of subsurface utilities, if available, and review any additional information that property owners may provide concerning buried utilities and other subsurface structures, before drilling is undertaken.
- Two vapor monitoring points on the 60 Tufts Street property and one monitoring point in the southern parking area of the 50 Tufts Street property will be extended below the groundwater table to allow the collection of either soil gas or groundwater samples. These locations were selected to help evaluate the extent and concentrations of VOCs in groundwater and will be used to design the SVE system. The combined soil gas monitoring points/groundwater monitoring wells are shown with a different symbol in Fig. 1. The groundwater monitoring wells will be sampled approximately one week after installation of the wells.

Task 2 - SVE diagnostic test - July 16 to 20, 2007

- GEI will conduct a diagnostic test to collect information about soil gas flow and vacuum distribution to support future design of an SVE system. The diagnostic test will likely be conducted using extraction points on the 50 Tufts Street property, although access to the monitoring points on the 60 Tufts Street property will be necessary to evaluate the subsurface influence of the test. The existing blower for the sub-slab depressurization system (SSDS) at 50 Tufts Street, or a portable blower, will be used to extract soil gas from one or two extraction points using temporary above-ground piping. During testing, changes in soil gas pressure and VOC concentrations will be measured in the neighboring soil gas monitoring points using a manometer and PID, respectively, and the air flow rate and VOC concentration of the discharge will be measured. The effluent from the extraction points will be treated with granular activated carbon before discharge. The results of the test will be used to evaluate the value and effectiveness of SVE and, if warranted, to design the appropriate number and spacing of permanent SVE points.
- Additional monitoring wells and soil gas monitoring points may be recommended based on the results of the proposed investigation and diagnostic test. Our recommendations for the number and locations of these monitoring points, if any, will be presented to the property owners for review and comment prior to conducting the work.

ATTACHMENT A
Immediate Response Action (IRA) Transmittal Form
(BWSC105)



Massachusetts Department of Environmental Protection

eDEP Transaction Copy

Here is the file you requested for your records.

To retain a copy of this file you must save and/or print.

Username: IGLADSTONE

Transaction ID: 151180

Document: BWSC 105 IRA

Size of File: 140.94 K

Status of Transaction: SUBMITTED

Date and Time Created: 10/11/2007::1:35:31 PM

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Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3

-

23246

A. RELEASE OR THREAT OF RELEASE LOCATION:

1. Release Name/Location Aid: 50 TUFTS ST & PROP ACROSS THE ST

2. Street Address: 50 TUFTS ST

3. City/Town: SOMERVILLE

4. ZIP Code: 02145-4129

5. UTM Coordinates: a. UTM N: 4694322

b. UTM E: 328049

☐ 6. Check here if a Tier Classification Submittal has been provided to DEP for this disposal site.

☐ a. Tier IA ☐ b. Tier IB ☒ c. Tier IC ☐ d. Tier II

☐ 7. Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114. Specify Program (check one):

☐ a. CERCLA ☐ b. HSWA Corrective Action ☐ c. Solid Waste Management

☐ d. RCRA State Program (21C Facilities)

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of Initial IRA Written Plan (if previously submitted): 1/9/2006

(mm/dd/yyyy)

☐ 2. Submit an **Initial IRA Plan**.

☒ 3. Submit a **Modified IRA Plan** of a previously submitted written IRA Plan.

☐ 4. Submit an **Imminent Hazard Evaluation**. (check one)

☐ a. An Imminent Hazard exists in connection with this Release or Threat of Release.

☐ b. An Imminent Hazard does not exist in connection with this Release or Threat of Release.

☐ c. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ d. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

☐ 5. Submit a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard**.

☐ 6. Submit an **IRA Status Report**.

☐ 7. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)

a. Type of Report: (check one) ☐ i. Initial Report ☐ ii. Interim Report ☐ iii. Final Report

b. Frequency of Submittal: (check all that apply)

☐ i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.

☐ ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.

☐ iii. A Remedial Monitoring Report(s) submitted concurrent with a IRA Status Report.

c. Number of Remedial Systems and/or Monitoring Programs: _____

A separate BWSC105A, IRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

**IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM** Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3

-

23246

B. THIS FORM IS BEING USED TO (cont.): (check all that apply)

☐ 8. Submit an **IRA Completion Statement**.

☐ a. Check here if future response actions addressing this Release or Threat of Release notification condition will be conducted as part of the Response Actions planned or ongoing at a Site that has already been Tier Classified under a different Release Tracking Number (RTN). When linking RTNs, rescoring via the NRS is required if there is a reasonable likelihood that the addition of the new RTN(s) would change the classification of the site.

b. Provide Release Tracking Number of Tier Classified Site (Primary RTN):

These additional response actions must occur according to the deadlines applicable to the Primary RTN. Use the Primary RTN when making all future submittals for the site unless specifically relating to this Immediate Response Action.

☐ 9. Submit a **Revised IRA Completion Statement**.

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

1. Identify Media Impacted and Receptors Affected: (check all that apply)

- ☒ a. Air ☒ b. Basement ☒ c. Critical Exposure Pathway ☒ d. Groundwater ☒ e. Residence
☐ f. Paved Surface ☐ g. Private Well ☐ h. Public Water Supply ☒ i. School ☐ j. Sediments
☐ k. Soil ☐ l. Storm Drain ☐ m. Surface Water ☐ n. Unknown ☐ o. Wetland ☐ p. Zone 2
☐ q. Others Specify: _____

2. Identify Oils and Hazardous Materials Released: (check all that apply)

- ☐ a. Oils ☒ b. Chlorinated Solvents ☐ c. Heavy Metals
☐ d. Others Specify: _____

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply, for volumes list cumulative amounts)

- | | |
|--|---|
| <input type="checkbox"/> 1. Assessment and/or Monitoring Only | <input type="checkbox"/> 2. Temporary Covers or Caps |
| <input type="checkbox"/> 3. Deployment of Absorbent or Containment Materials | <input type="checkbox"/> 4. Temporary Water Supplies |
| <input type="checkbox"/> 5. Structure Venting System | <input type="checkbox"/> 6. Temporary Evacuation or Relocation of Residents |
| <input type="checkbox"/> 7. Product or NAPL Recovery | <input type="checkbox"/> 8. Fencing and Sign Posting |
| <input type="checkbox"/> 9. Groundwater Treatment Systems | <input checked="" type="checkbox"/> 10. Soil Vapor Extraction |
| <input type="checkbox"/> 11. Bioremediation | <input type="checkbox"/> 12. Air Sparging |



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3

-

23246

D. DESCRIPTION OF RESPONSE ACTIONS (cont.): (check all that apply, for volumes list cumulative amounts)

☒ 13. Excavation of Contaminated Soils

☒ a. Re-use, Recycling or Treatment

☐ i. On Site Estimated volume in cubic yards

☒ ii. Off Site Estimated volume in cubic yards **61**

ii.a. Receiving Facility: **STABLEX CANADA** Town: **BLAINVILLE** State: **MA**

ii.b. Receiving Facility: Town: State:

iii. Describe: **FACILITY IN BLAINVILLE, QUEBEC J7C 3V4, CANADA**

☐ b. Store

☐ i. On Site Estimated volume in cubic yards

☐ ii. Off Site Estimated volume in cubic yards

ii.a. Receiving Facility: Town: State:

ii.b. Receiving Facility: Town: State:

☐ c. Landfill

☐ i. Cover Estimated volume in cubic yards

Receiving Facility: Town: State:

☐ ii. Disposal Estimated volume in cubic yards

Receiving Facility: Town: State:

☐ 14. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount:

b. Receiving Facility: Town: State:

c. Receiving Facility: Town: State:

☒ 15. Removal of Other Contaminated Media:

a. Specify Type and Volume: **SPENT GRANULAR ACTIVATED CARBON; 8,000 LBS**

b. Receiving Facility: **RINECO** Town: **BENTON** State: **AR**

c. Receiving Facility: Town: State:

☒ 16. Other Response Actions:

Describe: **TEMPORARY AIR PURIFIERS; SUB-SLAB DEPRESSURIZATION SYSTEMS**

☐ 17. Use of Innovative Technologies:

Describe:



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3 - 23246

E. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that an **Immediate Response Action Plan** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation comply(ies) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> if Section B of this form indicates that an **Immediate Response Action Status Report** and/or a **Remedial Monitoring Report** is(are) being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 9719

2. First Name: ILEEN S

3. Last Name: GLADSTONE

4. Telephone: 7817214012

5. Ext.:

6. FAX:

7. Signature: ILEEN S GLADSTONE

8. Date: 10/11/2007

(mm/dd/yyyy)

9. LSP Stamp:





Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3 - 23246

F. PERSON UNDERTAKING IRA:

1. Check all that apply: ☐ a. change in contact name ☐ b. change of address ☒ c. change in the person undertaking response actions
2. Name of Organization: **UNIFIRST CORPORATION**
3. Contact First Name: **JOHN R.** 4. Last Name: **BADEY**
5. Street: **68 JONSPIN ROAD** 6. Title: **VICE PRESIDENT OF ENGINEERING**
7. City/Town: **WILMINGTON** 8. State: **MA** 9. ZIP Code: **01887-0000**
10. Telephone: **978 6588888** 11. Ext.: **578** 12. FAX:

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA:

- ☒ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
- ☒ e. Other RP or PRP Specify: **OTHER PRP**

- ☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
- ☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
- ☐ 4. Any Other Person Undertaking IRA Specify Relationship:

H. REQUIRED ATTACHMENT AND SUBMITTALS:

- ☐ 1. Check here if any Remediation Waste, generated as a result of this IRA, will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement. If this box is checked, you must submit one of the following plans, along with the appropriate transmittal form.
- ☐ a. A Release Abatement Measure (RAM) Plan (BWSC106) ☐ b. Phase IV Remedy Implementation Plan (BWSC108)
- ☐ 2. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
- ☒ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the implementation of an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 4. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the submittal of a Completion Statement for an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 5. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to the DEP Regional Office.
- ☒ 6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL
FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

3 - 23246

I. CERTIFICATION OF PERSON UNDERTAKING IRA:

1. I, **JOHN R. BADEY**, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: **JOHN R. BADEY** Signature 3. Title: **VICE PRESIDENT OF ENGINEER**

4. For: **UNIFIRST CORPORATION** 5. Date: **10/11/2007**
(Name of person or entity recorded in Section F) (mm/dd/yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section F.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. FAX: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)

Received by DEP on

10/11/2007 11:50:43 AM

Memorandum of Telephone Conversation

Call To:**Name:** Stephanie MacLeod**Of:** MA DEP (eDEP)**Tele.No:** (617) 556-1100**Project No.** 04516-2**Date:** 9/18/07**Time:** 9:00 AM**From:****Name:** Heather Ballantyne**Of:** GEI Consultants, Inc.

400 Unicorn Park Drive

Woburn, MA 01801

781.721.4000 781.721.4073 fax

Distribution:

X

File

PM

X

Other, List

Attach to IRA Plan Mod. 8

Subject: Validation Issues with BWSC-105 form on eDEP

eDEP transaction: 147764

RTN": 3-23246

Discussion:

While filling out the BWSC-105 form on the eDEP web-site, I found I was unable to validate the form. The field that was preventing validation was Section D No.13.ii.a, which is for information pertaining to soil excavation. The excavated soil was sent to a facility in Canada, but the form will not allow you to give province abbreviations in the "state" field when describing the facility location and the form will not validate without a state abbreviation. I talked to Ms. MacLeod at eDEP and she instructed me to put in the correct town name for the facility, but to put "MA" for the state abbreviation. I then described the facility location in Section D 13.a.iii. Even though we only used one facility for soil disposal, I also had to fill out information for a second receiving facility to get the form to validate (Section D.13.ii.b). Ms. MacLeod instructed me to use "NA" for the facility name and town name, and "MA" for the state abbreviation.

October 10, 2007
Project 04516-2



Mr. Peter Mills
Somerville City Hall
93 Highland Avenue
Somerville, MA 02145

Geotechnical
Environmental and
Water Resources
Engineering

Dear Mr. Mills:

**Re: Immediate Response Action Plan Modification
50 Tufts Street, Somerville, MA
EP RTN: 3-23246**

On behalf of the UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. is notifying your office of a modification to the Immediate Response Action (IRA) that is being conducted at 50 Tufts Street (the Property).

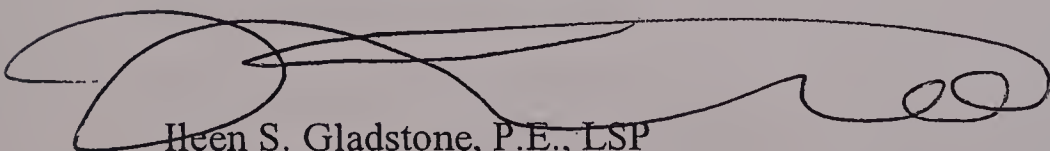
Chlorinated volatile organic compounds (VOCs), particularly tetrachloroethylene (PCE), have been measured in indoor air in the Property building. PCE was also measured in indoor air in one of the units at 60 Tufts Street.

Currently, the 50 Tufts Street property is unoccupied. A sub-slab depressurization system (SSDS) was installed inside the building and has been operating since April 30, 2007. The IRA modification is intended to reduce concentrations of VOCs in soil vapor by installing a soil vapor extraction (SVE) system at the Property. The SVE system will reduce the mass of contaminants in soil vapor at the 50 Tufts Street property, controlling the potential migration of soil vapor from the Property and reducing the potential for vapor intrusion into the 60 Tufts Street building.

This notification is made in fulfillment of the public notice requirements of the MCP (310 CMR 40.1403(3)(b)). If you have any questions, please contact me at 781.721.4012.

Very truly yours,

GEI CONSULTANTS, INC.



Heen S. Gladstone, P.E., LSP
Vice President

HAB/ISG:jah

c: Irene Dale, Massachusetts Department of Environmental Protection
John R. Badey, UniFirst Corporation

October 10, 2007
Project 04516-2



Ms. Noreen Burke
City Hall Annex – Health Department
50 Evergreen Avenue
Somerville, MA 02145

Geotechnical
Environmental and
Water Resources
Engineering

Dear Ms. Burke:

**Re: Immediate Response Action Plan Modification
50 Tufts Street, Somerville, MA
EP RTN: 3-23246**

On behalf of the UniFirst Corporation (UniFirst) of Wilmington, Massachusetts, GEI Consultants, Inc. is notifying your office of a modification to the Immediate Response Action (IRA) that is being conducted at 50 Tufts Street (the Property).

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Currently, the 50 Tufts Street property is unoccupied. A sub-slab depressurization system (SSDS) was installed inside the building and has been operating since April 30, 2007. The IRA modification is intended to reduce concentrations of VOCs in soil vapor by installing a soil vapor extraction (SVE) system at the Property. The SVE system will reduce the mass of contaminants in soil vapor at the 50 Tufts Street property, controlling the potential migration of soil vapor from the Property and reducing the potential for vapor intrusion into the 60 Tufts Street building.

This notification is made in fulfillment of the public notice requirements of the MCP (310 CMR 40.1403(3)(b)). If you have any questions, please contact me at 781.721.4012.

Very truly yours,

GEI CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "Heen S. Gladstone".

Heen S. Gladstone, P.E., LSP

Vice President

HAB/ISG:jah

c: Irene Dale, Massachusetts Department of Environmental Protection
John R. Badey, UniFirst Corporation

ATTACHMENT B
Design Memos

Memo

To: Ileen Gladstone, P.E., LSP
From: Larry Welch; Jim Ash, P.E., LSP
CC:
Date: August 7, 2007
Re: 50 Tufts Street - Soil Vapor Extraction System Design
 GEI Project Number – 045162

This memorandum presents the proposed design of a Soil Vapor Extraction (SVE) System at the property at 50 Tufts Street, Somerville, MA (the Property). The objective of the SVE System is to control the potential northward migration of volatile organic compounds (VOCs) in soil vapor from the Property and to remove VOCs from soil vapor near the building at the Property as a VOC source removal technique. Soil vapor extraction is a remediation method that can be very effective for removing volatile contaminants from unsaturated soil. The SVE System would use the same mechanical equipment that was installed for the sub-slab depressurization system (SSDS) that is currently operating at the 50 Tufts Street building. The blower for the SSDS was designed to have additional capacity that would allow connection to SVE points installed outside the building footprint. The principles of the existing SSDS are similar to the proposed SVE System, a blower is used to generate vacuum and extract soil vapor from the subsurface and transfer it to a central collection and treatment point.

Results of Soil Vapor Monitoring Points Installation and SVE Diagnostic Test

From July 9 through July 12, 2007, we installed 38 soil vapor monitoring points and three monitoring wells at the Property. The locations of the monitoring points and wells are shown in Figure 1. Two of the soil vapor monitoring points in the northern parking lot (SVT-5D and SVT-8S) were equipped with screened sections for use as temporary SVE points for pilot testing. From July 25 through July 31, 2007, we conducted a SVE diagnostic test by connecting the two pilot test points to the existing SSDS blower using temporary flexible vacuum hose. The results of the diagnostic test indicated that with an applied vacuum of 3 to 11 inches of water column to the pilot SVE points, a 45 to 90 feet radius of vacuum influence could be achieved.

SVE System Design

We propose to install five SVE points in the northern parking lot at the Property and two SVE points in the southern parking lot (Fig. 1). The SVE points in each area will be located approximately 40 feet apart. This proposed spacing is conservative based on the results of the diagnostic test which indicated a potential radius of influence from each SVE point of greater than 45 feet.

The SVE points will be installed with 4.25-inch inside diameter hollow-stem augers to a depth of 10 feet. Each SVE point will be constructed of 2-inch Schedule 40 PVC piping, screened from 6 to 10 feet below ground surface with 0.02-inch slotted PVC well screen (Fig. 2). The annular space around the screened section will be filled with No. 2 Morie sand and sealed from 4 to 5.5 feet with a bentonite/grout top seal. Individual SVE points will be connected below ground to 4" Schedule 40 PVC header pipes laid in trenches 18-24 inches deep below the parking area. The collection headers will daylight near the northwest and southwest corners of the building and each header pipe will be pitched to drain condensate back to a designated SVE point. Individual SVE points will be equipped with a shut-off/throttling valve and protected with a flush-mounted 18-inch square heavy duty (H-20

load rated) steel or concrete manhole. The shallow trenches will be backfilled with the excavated soil, excess soil will be characterized and shipped off-site for disposal. Areas of disturbed pavement will be patched with asphalt to match the elevation of the adjacent parking lot. Above ground header pipes will be secured to the exterior western wall of the building and connected to the existing pipe manifold inside the blower enclosure (Fig. 3). Soil vapor from the SVE headers will combine with the flow from the SSDS headers and be treated with the existing granular activated carbon units installed to treat the SSDS off-gas (two 2,000-pound carbon units in series).

SVE System Startup and Operation

We will initially operate the SVE System to remove elevated VOC concentrations, to remove residual source material in the vadose zone, if present, and to capture VOCs in soil vapor. We anticipate that the total VOCs removed by the system will decrease over time as remediation progresses. The rate of the decrease will be a function of the amount of residual NAPL present, if any, and the achieved extraction rate. After the total VOC concentrations decrease and approach a steady state condition, we may adjust the number of active extraction points.

If additional blower or treatment capacity is required to effectively operate the SVE System in conjunction with the SSDS, modifications will be made to the mechanical systems so that the goals of both the SSDS and SVE System can be met concurrently.

Monitoring

On days 1, 7, 14, and 28 after startup of the SVE System, we will measure the following:

- Total VOC concentrations at each of the active SVE System extraction points using a photoionization detector (PID).
- Soil vapor pressure at selected soil vapor monitoring points using a manometer with a resolution as low as 0.001-inch water.
- Total VOC concentration in the influent and effluent from the off-gas treatment system and between carbon units using a PID (since the off-gas treatment system is part of the currently operating SSDS, this monitoring may overlap with the existing SSDS monitoring program).

Because the operation of the SVE System will affect the flow rates and sub-slab vacuum of the SSDS, we will monitor potential changes to the SSDS on a daily basis during the first week of operation of the SVE system and make adjustments as necessary. We will collect indoor air samples inside the building after the SVE System has been started to confirm that the goals of the SSDS continue to be met. The regularly scheduled quarterly indoor air sampling may be used for this evaluation if the schedules coincide.

- Because the SVE System will use the same mechanical equipment and off-gas treatment as the SSDS, the current long term monitoring program for the SSDS (monthly inspections) is sufficient for monitoring the operation of the system equipment and the carbon usage rates. That program currently consists of monthly monitoring, at a minimum, to confirm that system parameters such as flow rate, vacuum, and off-gas concentrations remain consistent, and to monitor for potential breakthrough of the carbon units.
- In addition, after one month of operation of the SVE System and monthly thereafter, GEI will measure:
- Total VOC concentrations at each of the SVE System extraction points and from the influent and effluent of the off-gas treatment system using a PID.

Additionally, after significant modifications are made to the SVE System (e.g. changing the number of active extraction points), we will measure total VOC concentrations at each of the SVE System extraction points using a PID and measure soil vapor pressure at selected soil vapor monitoring points using a manometer. We will also evaluate the potential impact to the SSDS if SVE System changes are likely to significantly infringe on the operation of the SSDS.

